Development of a Regional Contaminated Sediment Inventory for New England

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Contaminated sediments are useful indicators of aquatic degradation, and the potential for direct and indirect effects on biota and human health. In 1997, EPA released the first National Sediment Inventory (NSI) to "depict and characterize the incidence and severity of sediment contamination based on the probability of adverse effects to aquatic life and to human health." However, the NSI is limited in New England because freshwater data are notably lacking. A second report of the NSI is scheduled to be released in 2003 with more recently collected data.

The objective of this project (funded by the RARE program) was to pilot a New England regional database of sediment quality information linked to a geographic information system (GIS) with data analysis capability, and that is compatible with the NSI. The database was populated with chemical data on sediment and fish, and results of sediment toxicity testing from Superfund sites and RCRA Corrective Action facilities. The database will enable EPA Region 1 to monitor for spatial and temporal patterns or trends in sediment quality.

Sediment chemical data were obtained in electronic format whenever possible through coordination with EPA project managers, logged onto data tracking sheets and checked against site assessment reports for quality assurance and data usability. Several possible database structures and software products were evaluated and NOAA's Query Manager™ was chosen. Data were formatted to conform to a standard Electronic Data Deliverable (EDD) and imported electronically to the pilot database.

Inventorying data was often difficult across sites and facilities because data were generated with inconsistent electronic reporting requirements and full documentation was sometimes unavailable. In some cases, geographic coordinates were missing or incompatible with maps. Quality assurance issues that affected data usability included: non-standard chemical names and CAS numbers, missing data or measurement units or data qualifiers, and inconsistent reporting of sample depths. Despite these difficulties, data from 11 sites or facilities including background data were incorporated to the database.

The next step is to apply spatial and statistical analyses and perform screening-level risk evaluations to the data similar to the 2001 NSI. The relational database and results will be distributed on the EPA regional web site or on compact disc with explanatory text and a user's manual. It is anticipated the database system will be used and maintained to answer frequently asked questions such as: What is the background sediment quality in particular geographic areas? This RARE project provides a framework for continued development and maintenance of a regional database.

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